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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/716,411 | 11/20/2003 | Masazumi Marutani | 1344.1128 | 5556 |

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| PAYNE, DAVID C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2613 | |

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/716,411 | MARUTANI ET AL. | |
| | Examiner | Art Unit | |
| | David C. Payne | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15* is/are allowed.

6)☒ Claim(s) *1-3 and 16* is/are rejected.

7)☒ Claim(s) *4-14 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimoto et al. US 20020089724 A1 (Nishimoto).

Re claims 1-3 and 16, Nishimoto disclosed,

In FIG. 1, a dispersion compensating apparatus 1 comprises: a variable dispersion compensator 10 as a waveform degradation compensating section for compensating for wavelength dispersion in an optical signal to be input; an optical receiving circuit 11 and a bit error information monitoring circuit 12, cooperatively acting as a bit error information generating section for generating information concerning bit errors of the optical signal (hereinafter called "bit error information") to be output from the variable dispersion compensator 10; and a controlling circuit 13 as a controlling section for controlling a wavelength dispersion value ( compensation amount) of the variable dispersion compensator 10 based on the bit error information generated by the bit error information monitoring circuit 12.

The optical signal to be input into the variable dispersion compensator 10 is provided through an optical transmission path not shown in FIG. 1, and is an optical signal at a higher bit rate such as 40 Gb/s, the waveform of which is degraded caused by the dispersion characteristics of the optical transmission path.

The variable dispersion compensator 10 is a known optical device capable of variably compensating for the wavelength dispersion of the input light. Specifically, the compensator may include the aforementioned VIPA (Virtually-Imaged-Phased-Array) device, or an optical device utilizing the FBG (Fiber-Bragg-Grating). As described later herein, this variable dispersion compensator 10 compensates for polarization mode dispersion of the input light, simultaneously with wavelength dispersion thereof.

The optical receiving circuit 11 receives the optical signal output from the variable dispersion compensator 10, converts the optical signal into an electrical signal, conducts known receive processing such as clock regeneration and data identification for the electrical signal, and outputs a receive-data signal indicating the processing result to the bit error information monitoring circuit 12.

The bit error information monitoring circuit 12 measures such as a bit error rate concerning the receive-data signal from the optical receiving circuit 11, and outputs the measuring result as the bit error information to the controlling circuit 13. As a concrete method for measuring a bit error rate, it is possible to utilize known measuring methods such as a method to conduct a parity check of a receive-data signal to thereby judge a bit error, and a method to use B1 byte or B2 byte of a signal conforming to SONET or SHD.

Preferably, in applying an error-correcting code to the optical signal to be input into the variable dispersion compensator 10, the bit error information monitoring circuit 12 is constituted: to measure a bit error in a state before error correction processing to be executed by an error-correcting circuit 14 concerning the receive-data signal from the optical receiving circuit 11, and to output the measuring result as bit error information to the controlling circuit 13 as shown in FIG. 2; or to output, as the bit error information, the number of error corrections to be detected at error correction processing in the error-correcting circuit 14, to the controlling circuit 13 as shown in FIG. 3. In applying an error-correcting code to the input light in this way, by measuring an error rate in a state before the error correction processing or utilizing the number of error corrections at the error correction processing, it becomes possible to restrict an impact (occurrence of bit error) upon the service, to a smaller degree.

The controlling circuit 13 automatically controls the compensation amount of wavelength dispersion at the variable dispersion compensator 10 based on the bit error information such as either the bit error rate or the number of error corrections to be sent from the bit error information monitoring circuit 12 or the error-correcting circuit 14. The concrete controlling method to be conducted by this controlling circuit 13 will be described later, e.g., paragraphs 50-56.

4. Claims 1-3 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Akiyama et al. US 5973816 A1 (Akiyama).

Re claims 1-3 and 16, Akiyama disclosed,

Referring now to FIG. 16(B), a laser diode 106, a Mach-Zehnder modulator 107, a pulse generator 108, and a detector 109 are provided on the transmission side of the optical transmission system. Laser light emitted from laser diode 106 is input to Mach-Zehnder modulator 107 and, simultaneously, a pulse signal 421 generated by pulse generator 108 is input to Mach-Zehnder modulator 107. For example, pulse generator 108 drives Mach-Zehnder modulator 107 on one side only, and sets the driving voltage Vin to double the half-wavelength voltage V.pi..

Thus, by providing only one pulse signal 421, two optical pulses 422 and 423 are output from Mach-Zehnder modulator 107, and a wavelength chirping is generated corresponding to the increment ratio of pulse signal 421, thereby producing the different wavelengths of optical pulses 422 and 423 output from Mach-Zehnder modulator 107.

Optical pulses 422 and 423 output from Mach-Zehnder modulator 107 are transmitted through an optical fiber 110, reflected by a loopback device 111 and returned to optical fiber 110. Thus, the pulses are transmitted and returned through optical fiber 110. Optical pulses 422' and 423' transmitted and returned through optical fiber 110 are detected by detector 109. The change of the pulse interval between optical pulses 422' and 423' is double the change of the pulse interval measured when the pulses pass through optical fiber 110 only once.

The pulse interval d+2.DELTA.d of optical pulses 422' and 423' is measured and compared with the pulse interval d of optical pulses 422 and 423 to compute the change 2.DELTA.d of the pulse interval. As a result, the wavelength dispersion of optical fiber 110 can be obtained by Equation (12) based on the change 2.DELTA.d of the pulse interval. High-precision measurement can be realized even if a dispersion value of optical fiber 110 and wavelength chirping .DELTA..lambda. are small. Laser diode 106, Mach-Zehnder modulator 107, pulse generator 108, and detector 109 can be provided on the transmission side of the optical transmission system by looping back optical pulses 422 and 423 by loopback device 111. As a result, a system configuration of a small size can be realized, e.g. col./lines: 16/25-65.

*Allowable Subject Matter*

5. Claims 4-14, and 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claim 15 is allowed.

*Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7:00a - 4:30p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dcp

David C. Payne
**David C. Payne**
**Primary Examiner**
**AU 2613**